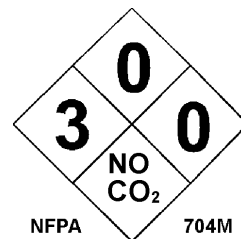


**Rapid Electroplating Process, Inc.**  
**Material Safety Data Sheet**



Complies with OSHA's Hazard Communication Standard  
 29 CFR 1910.1200. Based on OSHA Form 174, Sept, 1985  
 Title III, SARA, Section 313, 40 CFR Part 372.45

Complies with Canadian WHMIS MSDS Requirements  
 Based on WHMIS Form #CH3

**PRODUCT IDENTITY: ACTIVATOR #4**

**PRODUCT USE: Portable Electroplating**

The information and disclosures presented herein are provided to inform users about the dominant and potential hazards known to be associated with our products. The release of this information by Rapid Electroplating Process, Inc. for use by others is with the expressed intent of being solely for health and safety purposes by qualified individuals. Rapid Electroplating Process, Inc. will consider any other use or dissemination as a breach of trust by the user.

**SECTION I--MANUFACTURER**

**Manufacturer's Name:**

Rapid Electroplating Process, Inc.

**Emergency Telephone Number:**

(708) 344-2504 or (703) 250-8713  
 CHEMTREC 1-800-424-9300

**Prepared By:**

R. F. Rapids

**Address:**

2901 W. Soffel Ave.  
 Melrose Park, IL 60160-1714  
 USA

**Telephone Number for Information:**

(708) 344-2504  
 Mon-Fri, 8 a.m. - 4:30 p.m. (Central Time)

**Date Prepared:**

04 Apr 2002

**SECTION II--HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

**Legal Notices:**

**FEDERAL: 'Superfund Amendments and Reauthorization Act (SARA) of 1986':**

This product contains a toxic chemical subject to Title III SARA, Section 313 and 40 CFR Part 372 toxic chemical release reporting requirements.

**CALIFORNIA: 'Safe Drinking Water and Toxic Enforcement Act of 1986':**

This notice is not known to apply.

<u>Hazardous Components</u>	<u>CAS #</u>	<u>UN #</u>	<u>LD50 mg/Kg</u>	<u>LC50 mg/M3</u>	<u>Listed By</u>			<u>OSHA</u>	<u>ACGIH</u>	<u>Wt.%</u>
					<u>SARA</u>	<u>CALIF</u>	<u>WHMIS</u>	<u>PEL mg/M3</u>	<u>TLV-TWA mg/M3</u>	
NaCN Sodium Cyanide	143-33-9	UN 1689	OR 6.44	Not Avail.	Yes	No	Yes	5(Skin)*	5(Skin)C(S)*	< 10
Na2CO3 Sodium Carbonate	497-19-8	Not Avail.	OR 4090	IR 2300	No	No	Yes	15**	Not Avail.	< 5

Components NOT Designated  
 As Hazardous in References  
 or <1 Wt% Each } ----- As a Group ----- > 85

**Notes:**

OR - Oral Rat; IR - Inhalation Rat; C - Ceiling Limit; (S) - ACGIH STEL, TWA Not Available

Product Total CN (as CN): < 5. Wt% (< 18 gm/pt).

\* - as CN

\*\* - Particulates Not Otherwise Regulated (PNOR); 5 - Respirable fraction

Under normal conditions of evaporation, only the water phase is expected to evaporate leaving the soluble salts behind. Any TWA is thus believed to be meaningful only for the abnormal case in which the solution as a whole is introduced into the air as an aerosol.

Because of manufacturing variances and possible product improvements, the compositions and physical properties listed here should be considered representative. The values listed should not be construed as specifications.

### **SECTION III--PHYSICAL/CHEMICAL CHARACTERISTICS**

**Boiling Point:** > 212° F.

**Vapor Pressure (mm Hg):** As Water.

**Vapor Density (Air=1):** As Water.

**pH:** 11.

**Co-efficient of Water/Oil Distribution:** Contains No Oil.

**Specific Gravity (H<sub>2</sub>O=1):** 1.03

**Melting/Freezing Point:** < 32° F.

**Evaporation Rate (Butyl Acetate=1):** As Water.

**Volatile Organic Components (%Vol):** None.

**Odor Threshold:** Not Available.

**Solubility in Water:** Aqueous solution--miscible with water.

**Physical State/Appearance and Odor:** Red Liquid, slight ammonia odor.

### **SECTION IV--FIRE AND EXPLOSION HAZARD DATA**

**Flash Point and Method:** Non-Combustible.

**Flammable Limits:** Not Applicable. **UEL/LEL:** Not Applicable.

**Sensitivity To: Static Discharge:** Insensitive.

**Mechanical Impact:** Insensitive. **Autoignition Temperature:** Not Applicable.

**Extinguishing Media:**

As appropriate for surrounding fire. Avoid CO<sub>2</sub> or acid-based extinguishers in confined area because they may react with spilled material to produce HCN.

**Special Fire-Fighting Procedures:**

Wear self-contained breathing apparatus. If material is free to mix with water, mixing may result in toxic water runoff.

**Unusual Fire and Explosion Hazards/Hazardous Combustion Products:**

Contact with acid or acid salts can release HCN; with extreme heating beyond dryness, decomposition of residue can yield nitrous oxides, cyanates, toxic cyanide fumes, and/or metal oxide fumes.

### **SECTION V--REACTIVITY DATA**

**Stability:** Stable.

**Reaction Conditions to Avoid:** High heat. Mixing with incompatible materials.

**Incompatibilities (Materials to Avoid):**

Acids, acid salts, and weak alkalies. Strong oxidizers (e.g. nitrates and chlorites) may react exothermally.

**Hazardous Decomposition or Byproducts:**

On extreme heating or mixing with acids: metal oxides, nitrous oxides, cyanates, and/or flammable HCN gas.

**Hazardous Polymerization:** DOES NOT OCCUR.

### **SECTION VI--HEALTH HAZARD/TOXICOLOGICAL DATA**

**Health Hazards:**

The following is based on information/recommendations for undiluted components.

POTENTIALLY LETHAL IF INGESTED.

**Exposure Risks- Inhalation:** AS MIST.

**Skin Absorption/Contact:** POSSIBLE.

**Ingestion:** YES.

**Eye Contact:** YES.

**Acute:** **DO NOT TAKE INTERNALLY. Can cause eye burns.**

Irritant to skin, eyes and other mucous membranes.

TLV 'skin' notation indicates that cyanide may penetrate the skin, especially if broken.

Based on component data, the LD<sub>50</sub> for Activator #4 is estimated to be > 128.59 mg/kg.

**Chronic:**

DUPONT suggest that small exposures to cyanide continuing over a long period have caused decreased thyroid activity and kidney changes. Long-term administration to dogs have produced unspecified acute intoxication symptoms, increased numbers of red blood cells, decreased proteins and central nervous system changes. Literature indicates that body can metabolize small amounts of cyanide without chronic/long term residual effects.

**Carcinogenicity, Reproductive Toxicity, Teratogenicity, and Mutagenicity:**

**Listed By:** NTP: NO.

**IARC Monographs:** NO.

**OSHA Regulated:** NO.

No Component is listed by NTP.

No Component is listed by IARC.

No Component is listed by OSHA for special consideration.

No Component is listed by ACGIH as carcinogenic.

DUPONT reports that limited reproductive studies do not suggest effects from sodium cyanide. Some tests have shown the potential for developmental toxicity but only at exposure levels producing toxic effects in the adult animal.

**Signs and Symptoms of Exposure:**

Cyanide Exposure: Weakness, dizziness, confusion, headache, vomiting, skin/mucous membrane irritation. In the extreme case, cyanosis, unconsciousness and death. Cyanide disrupts the oxidative mechanism; skin may have deceptively healthy pink to red color but with injury or lack of oxygen may be bluish. Prompt action is needed to prevent further injury or death.

**Synergisms:**

None known.

**Irritancy, Sensitization, and Medical Conditions Generally Aggravated by Exposure:**

Chronic skin, respiratory/pulmonary, and certain blood and central nervous system disorders may increase susceptibility to the effects of cyanides and hydroxides.

**Emergency and First Aid Procedures:**

Move to fresh air; flush affected area with water (especially under eyelids if eyes affected); remove contaminated clothing; treat for shock as necessary. Never give anything by mouth to an unconscious person.

If breathing stops, give artificial respiration. Call physician.

If taken internally, contact with eye/mucous membrane occurs, or irritation develops, contact physician/poison control center.

If taken internally and victim is conscious, give water and induce vomiting. Keep head below hips to prevent aspiration of vomitus. Call physician.

If unconscious from effects of cyanide, use amyl nitrite and oxygen as directed by cyanide first aid kit instructions. Call physician. (Amyl nitrite is a vasodilator. As a part of safety planning, consult physician regarding use if heart conditions exist.)

If any symptoms develop, administer oxygen. DUPONT suggests that intravenous injections by a physician of sodium nitrite and sodium thiosulfate may be useful for severe cyanide exposure. Without symptoms, no treatment is suggested--decontaminate and observe for at least 30 minutes (the half-life of cyanide in the body is about 20-90 minutes). An expansive discussion of cyanide first aid from the DUPONT MSDS is available on request.

**SECTION VII--PRECAUTIONS FOR SAFE HANDLING AND USE**

**Steps to be Taken in Case Material is Released or Spilled:**

Contain/absorb spill with inert material; ventilate area; restrict entry into area until material is collected/contained for proper disposal. After pickup, clean effected area with mild hypochlorite (bleach, etc.) and water solution.

**Waste Disposal Method:**

Do not flush cyanide compounds into sewers which may contain an acid. Use toxic material disposal service or hypochlorite detoxification. Comply with all federal, state and local regulations for ultimate disposal of cyanide waste solution.

**Precautions to be Taken in Handling and Storing: DO NOT MIX WITH OTHER CHEMICALS.**

Keep container closed when not in use; store/use in ventilated areas and avoid temperature extremes. Keep away from foodstuff, acids, and other incompatible materials. Do not store near combustible/flammable materials (in the event of fire and container rupture, there is the potential for cyanide solution runoff from fire-fighting water). As a strong poison, cyanides should be controlled and handled by responsible individuals.

**Other Precautions: USE IN WELL-VENTILATED AREA. Keep away from children.**

Activator 4 may give off some ammonia gas during use, and under unusual conditions, HCN.

To reduce the possibility of injury by splatter or obstruction of ventilation/air movement, do not crowd workpiece with body or face. Avoid conditions that could allow workpiece to: bend/spring-back and "flick" solution; or drop into puddled solution and splash.

**SECTION VIII--CONTROL/PREVENTATIVE MEASURES**

**Respiratory Protection (Specify Type):** NIOSH approved dust/mist respirator.

**Ventilation: Local Exhaust:** YES.

**Mechanical:** As needed to augment exhaust.

**Special:** Not Applicable.

**Other:** Not Applicable.

**Protective Gloves:** Rubber, e.g., butyl or neoprene.

**Eye Protection:** Chemical splash goggles/face shield. Avoid use of contact lenses.

**Other Protective Clothing or Equipment: Inert, absorbent materials for spills.**

As appropriate for conditions of use: Rubber aprons/suits, eye wash fountain, safety shower. Amyl nitrite ampoules and 'Medical Treatment Kit for Cyanide' (produced by Eli Lilly & Co.; available through pharmacies with a physician's prescription; has approximately a one year shelf life).

**Work/Hygienic Practices: DO NOT TAKE INTERNALLY. Keep away from eyes and out of open wounds.**

Practice good personal hygiene; do not smoke/eat/drink in area of use; wash hands after use; wash clothing/materials that may have come in contact with chemicals.

## SECTION IX--OTHER INFORMATION

### Reportable Quantity:

<u>Component:</u>	<u>RQ:</u>	<u>Product Equivalent:</u>
Sodium Cyanide	10 lb/ 4.54 kg	> 90 Pints

### Product Shipping Information:



	<u>U.S. DOT:</u>	<u>IATA:</u>
<u>Proper Shipping Name:</u>	Corrosive Liquid, Toxic, n.o.s. (Sodium Cyanide)	Corrosive Liquid, Toxic, n.o.s. (Sodium Cyanide)
<u>UN No:</u>	UN 2922	UN 2922
<u>Hazard Class:</u>	8	8
<u>Packing Group No:</u>	II	II
<u>Label(s):</u>	Corrosive, Poison	Corrosive, Poison
<u>Listed as Marine Pollutant:</u>	No	

## SECTION X--SOURCES OF INFORMATION


- Dudavari, Susan, Editor, "The Merk Index", 11th Edition, Merck & Co, Rahway, NJ., 01 Jan 1989
- Sax, N. Irving, "Dangerous Properties of Industrial Materials", Fifth Ed., Van Nostrand Reinhold Co, NY, 01 Jan 1979
- ACGIH, "2000 TLVs and BEIs-Threshold Limit Values for Chemical Substances in Work Air Adopted by ACGIH", 01 Mar 2000
- National Toxicology Program (USHHS/PHS), "9th Report on Carcinogens, Revised January 2001", 01 Jan 2001
- EPA, "Title III List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act, As Amended", EPA-550-B-98-017, 01 Nov 1998
- Code of Federal Regulations 29, "Labor, Parts 1910.1000, SubPart Z", 01 Jul 1999
- Code of Federal Regulations 40, "Protection of the Environment"
- Code of Federal Regulations 49, "Transportation", 01 Oct 2001
- California Code of Regulations 22 Division 2, "Safe Drinking Water and Toxic Enforcement Act of 1986", "12000., Chemicals known to the State to Cause Cancer and Reproductive Toxicity", 20 Apr 2001
- Toxicological Index Service, CSST, "WHMIS, Classification of Chemical Substances", www.reptox.csst.qc.ca/Documents/SIMDUT/ListeAng/Htm/ListeAngAll.htm, 01 May 2001
- IATA, "Dangerous Goods Regulations", 01 Jan 2002
- Various Chemical Suppliers, "MSDS's which did not identify chemicals as hazardous"
- C. P. Hall Company, "MSDS for Sodium Carbonate, Anhydrous", 15 Dec 1998, (Rcv'd 06 Jun 2000)
- Dupont, "MSDS for Sodium Cyanide", 07 Sep 1998

## SECTION XI--PACKAGE LABELING

(U.S. and Canadian Distribution)

<p><b>CAUTION:</b> Can Cause Eye/Skin Burns Use: Chemical Splash Goggles/Face Shield; Butyl or Neoprene Gloves; Adequate Ventilation. Consult Your Safety Department and Material Safety Data Sheets Before Use. Dispose of Waste Materials According to Federal, State and Local Regulations. <b>Rapid Electroplating Process, Inc.</b> <b>CHEMTREC: 1-800-424-9300</b> <b>(708) 344-2504</b></p>	<p>16 Fl. Oz. 473 mL</p>  <p><b>RAPID ACTIVATOR NO. 4</b></p> <p><b>For preparing copper bus bars for RAPID Silver Plating. Not recommended for use on iron/steel.</b></p> <p><b>To Prepare Work for RAPID Plating</b></p> <ol style="list-style-type: none"> <li>Remove burrs, sharp edges, etc. from area to be plated.</li> <li>Apply Activator #4 using Swab #49 with a rubbing action and wipe off with paper towel.*</li> </ol> <p><b>Keep out of reach of children.</b></p> <p><b>DANGER POISON:</b> Contains cyanide. Keep away from acids, open wounds, feed and food products. Do not take internally. *See side panels, Material Safety Data Sheets and General Instructions.</p> <p>©1999 <b>RAPID ELECTROPLATING PROCESS, INC.</b> 2901 W. Soffel Ave. Melrose Park, IL 60160</p> <p>Made in U.S.A.</p>	 <p>NFPA 704M</p> <p>© 1990, National Fire Protection Association, Quincy, MA 02269. Used with permission.</p> <p><b>USE IN WELL VENTILATED AREAS</b></p> <p><b>DO NOT MIX WITH ACIDS</b></p> <p><b>FIRST AID:</b> Move to fresh air. <b>EXTERNAL:</b> Flood with water. <b>EYES:</b> Rinse with water--open eyelids for complete rinsing. <b>INTERNAL:</b> Give water and induce vomiting. As needed: Artificial respiration, amyl nitrite at 15 second intervals. <b>CALL A PHYSICIAN.</b></p>
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(Canadian Distribution Only)

<p style="text-align: center;">ACTIVATOR #4</p> <p><b>RISK PHRASES</b> Do not take internally contains cyanide.</p> <p><b>PRECAUTIONARY MEASURES</b> Keep away from acids, open wounds, feed &amp; food products.</p> <p><b>FIRST AID MEASURES</b> If swallowed, call a physician immediately. Give soapy water until vomiting occurs. 15 secs. Inhalation of amyl nitrate @ 15 sec. intervals; artificial respiration if necessary.</p> <p style="text-align: center;"></p> <p><b>RISQUES POSSIBLES</b> Ne pas ingérer, contient de la cyanure.</p> <p><b>MEASURES DE PRECAUTION</b> Garder éloigné des acides, des lésions corporelles et de la nourriture.</p> <p><b>SOINS D'URGENCE</b> Si ingéré, appeler le médecin immédiatement. Induire le vomissement en donnant de l'eau savonneuse. Inhaler de l'amyl-nitrate durant 15 secs. à intervalles de 15 secs. Si nécessaire, employer la respiration artificielle.</p> <p style="text-align: center;"><b>SEE MATERIAL SAFETY DATA SHEET FOR FURTHER INFORMATION</b> <b>CONSULTER LA FICHE SIGNALÉTIQUE</b></p> <p style="text-align: center;"><b>GEORGE M. FRASER LTD.</b> 11 Progress Avenue, Unit 10 Scarborough, Ontario, M1P 4S7 Tel: (416) 298-0006 Fax: (416) 298-8771</p>
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This Material Data Sheet was prepared in accordance with U.S. and Canadian guidelines. All information, recommendations and suggestions appearing herein concerning our product are based upon information and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity and suitability of the product described herein for his/her own use. Since the actual use by others is beyond our control, no guarantees expressed or implied are made by Rapid Electroplating Process, Inc. as to the effects of such use, the results to be obtained, or the safety and toxicity of the product, nor does Rapid Electroplating Process, Inc. assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.